

SSC5000 Series

T-42-11-09

0.8u HIGH SPEED CMOS STANDARD CELL SERIES

■ DESCRIPTION

The S-MOS SSC5000 standard cell series is a 0.8 micron (drawn) family of standard cell circuits. It is manufactured on S-MOS' state-of-the-art 0.8 micron double-metal N-well CMOS process. It is comprised of 20 gate-to-I/O combinations of die sizes. The gate count ranges from 5,000 to 100,000 usable gates. The I/O count ranges from 112 to 436 pads for wire bond technology. Optional I/O cells available for tight pad pitch TAB assembly technology. Multiple output driver types are offered up to 24ma drivers with single outputs and 48ma drivers with parallel outputs.

The SSC5000 series has been tailored for high performance designs with typical gate delays of 300 picoseconds. Additionally, high-speed and silicon-efficient RAM blocks are offered as customized cells. Block sizes range from 128x8 bits to 8Kx32 bits. The series is offered in a wide variety of packages including QFPs from 44 to 304 pins and TAB assembly technology.

The SSC5000 series is supported by S-MOS' own design system with NavNet schematic editor as well as most major CAE systems including Mentor, Valid, ViewLogic, Synopsys, Verilog, IKOS, DAZIX, FutureNet and OrCAD.

■ FEATURES

- 0.8 micron (drawn) channel length N-well double metal CMOS
- Very high speed: tpd = 300psec (NAND typical, FO=2 & 2mm AL)
- High Drive
 - 24mA with a single output
 - 48mA with parallel output
- Low gate-to-pads ratio for high pin count applications
- Optional tight pitch I/O available for TAB assembly technology
- RAM blocks up to 8K x 32 bits available
- Megacells compatible

■ PRODUCT CONFIGURATION

Array Member	Usable Gates			Total # of Pads
	Min	Avg	Max	
SSC5010	5944	6461	6978	112
SSC5020	9698	10542	11385	136
SSC5030	11991	13034	14077	152
SSC5040	14873	16166	17459	168
SSC5050	18060	19630	21201	184
SSC5060	21327	23181	25036	200
SSC5070	22695	24669	26642	208
SSC5080	27063	29417	31770	224
SSC5090	29808	32400	34992	232
SSC5100	33771	36708	39645	248
SSC5110	36035	39168	42301	256
SSC5120	39418	42846	46274	264
SSC5130	41478	45085	48691	272
SSC5140	44372	48231	52089	280
SSC5150	51911	47758	56064	288
SSC5160	56120	61000	65880	316
SSC5170	67344	73200	79056	340
SSC5180	78568	85400	92232	364
SSC5190	89792	97600	105408	392
SSC5200	112240	122000	131760	436

NOTE: The device fit is only guaranteed for minimum number of usable gates, and to fit the maximum number of usable gates into the device depends on design and the NET count.

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Power Supply Voltage	V _{DD}	-0.3 to 7.0	V
Input Voltage	V _I	-0.5 to V _{DD} +0.5	V
Output Voltage	V _O	-0.5 to V _{DD} +0.5	V
Storage Temperature	T _{stg}	-65 to +150	°C

■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	5V DC Operation (TTL input)			5V DC Operation (CMOS input)			Low-voltage Operation*			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Power supply voltage	V _{DD}	4.75	5.0	5.25	4.5	5.0	5.5	2.4	—	5.5	V
Input voltage	V _I	V _{SS}	—	V _{DD}	V _{SS}	—	V _{DD}	V _{SS}	—	V _{DD}	V
Operating temperature	T _{opr}	0	—	70	-20	—	80	-20	—	80	°C

■ SSC5000 SERIES PACKAGE LIST

Package Type	No. of Pads		Device code		5010	5020	5030	5040	5050	5060	5070	5080	5090	5100	5110	5120	5130	5140	5150	5160	5170	5180	5190	5200
	No. of Pins	C O D E	Gross	Gates	112	136	152	168	184	200	208	224	232	248	256	264	272	280	288	312	332	360	384	428
					5070	9010	11140	13700	16800	19480	20730	24720	27000	30590	32940	35410	37280	39660	42550	50000	60000	70000	80000	100000
Plastic DIP	16	C16																						
	18	C18																						
	24	C24	L	L	L																			
	28	C28	L	L	L	L	L																	
	40	C40	L	L	L	L	L																	
Plastic Shrink DIP	42	C42	L	L	L	L	L																	
	64	S64	L	L	L	L	L	L																
Plastic QFP	44	F44-4	L	L	L	L																		
	44	F44-6	A	A																				
	48	F48-12																						
	52	F52-6	A	A																				
	60	F60-5	A	A																				
	60	F60-6	A	A	L	L	L	L	LQ	LQ														
	64	F64-5	L	L	L	L	L	L	L	L														
	64	F64-6	A	A																				
	64	F64-13	A	A	LQ	LQ	LQ																	
	80	F80-5	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ									
	80	F80-14	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ											
	100	F100-5	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ									
	100	F100-15	A	A	A	A	A	A	A	A	A	LQ	LQ											
	120	F120-8	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ
	128	F128-5	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ	LQ								
	128	F128-8	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ	LQ						LQ	LQ	LQ
	144	F144-8	L	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ
	160	F160-8		L	A	A	A	A	A	A	A													
	184	F184-16						A	A	A	A	A	A	A	A	A	A	LQ	LQ	LQ	LQ	LQ	LQ	LQ
	196	F196-9						A	A	A	A	A	LQ	LQ	LQ	LQ	LQ		LQ			LQ	LQ	LQ
	208	F208-8						A	A	A	A	A	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ	LQ
	232	F232-10												L	L	L	L	L	L	L	L	L	L	L
	240	F240-16																						
	256	F256-9										A	A	A	A	A	A	A	A	A	A	A	LQ	LQ
	304	F304-10																		L	L	L	L	L
Plastic SOP	14	PSOP5																						
	24	PSOP1	L																					
	24	PSOP2	L																					
	28	SOP2	L																					
PLCC	44	J44	A	A	L	L	L	L	LQ															
	68	J68	A	A	L	L	L	L	L	L	L	L	L	L	L	L	LQ	LQ						
	84	J84	A	A	A	A	L	L	L	L	L	L	L	L	L	LQ	LQ	LQ	LQ			LQ	LQ	LQ
Plastic PGA	89	G89	A	A	A	A	A	A	A															
	132	G132			A	A	A	A	A															
	176	G176							A	A	A	A	A											
	208	G208								A	A	A	A											
	240	G240									A	A	A	A										
Ceramic PGA	64	P64	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L					
	72	P72																						
	132	P132						L	L	L		L					L	L	L	L	L	L	L	L
	257	F257									L		L				L		L	L	L	L	L	L
	299	P299																	L	L	L	L	L	L

A: Available

*: Pin-Pad table exist

L: Need Lead frame development (2.5 months for new lead frame development)

Q: Need Qualification (reliability test) (2.5 months for reliability test)

LQ: Need Lead frame and Qualification (reliability test)(2.5 months for new lead frame development and/or 2.5 months for reliability test)